

PROJECT TITLE : Unit Operations II
PERIOD COVERED : May 27th - June 30th, 1980
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STRIPS EXTRACTION

The last trials with the rented carousel extractor from Ex-Technik were carried out at lower feedwater temperatures.

The objective was to optimize the temperature with respect to the ammonia and nitrate-nitrogen concentrations of the extract in order to overcome the problems encountered with the fermentation of strips extract which were reported earlier (Ref. 1). Therefore the $\text{NH}_3\text{-N}$ and $\text{NO}_3\text{-N}$ levels of the extract were determined at different feedwater temperatures.

Temperatures of 18, 30, 35, 40 and 45°C were tried at the following conditions :

Extraction time : 40 min
Input strips : ~18 kg/h
Ratio strips to water : ~ 1 : 10

The extract of the lowest temperature was used for a fermentation trial in the 20:1 fermenter, NINO trial 59 (Ref. 2).

The figure on appendix 1 shows the effect of the temperature on the ammonia and nitrate-nitrogen levels of the extract. Somewhere between 40 and 50°C the $\text{NH}_3\text{-N}$ level starts to exceed the $\text{NO}_3\text{-N}$ concentration.

The figure on appendix 2 shows the effect of the temperature on the extraction grades of the strips for HWS, $\text{NO}_3\text{-N}$ and $\text{NH}_3\text{-N}$.

These results suggest that future trials for strips extraction should be carried out at temperatures lower than 50°C and this for two reasons :

- 1) At lower temperatures the concentration of $\text{NO}_3\text{-N}$ in the extract always exceeds the level of $\text{NH}_3\text{-N}$.
- 2) Between 40 and 50°C more than 80% of the nitrate present in the unwashed strips are extracted.

DUST SIEVING FOR MONIQUE/RCB

An offer was received from Chauvin in Grenoble for spare parts of the sieving machine in Onnens.

REFERENCES:

- Ref. 1 : Monthly report, April 1980, Biotechnology,
D. Schulthess.
- Ref. 2 : Monthly report, June 1980, Nitrate Reduction by
Controlled Fermentation, C. Ruf.

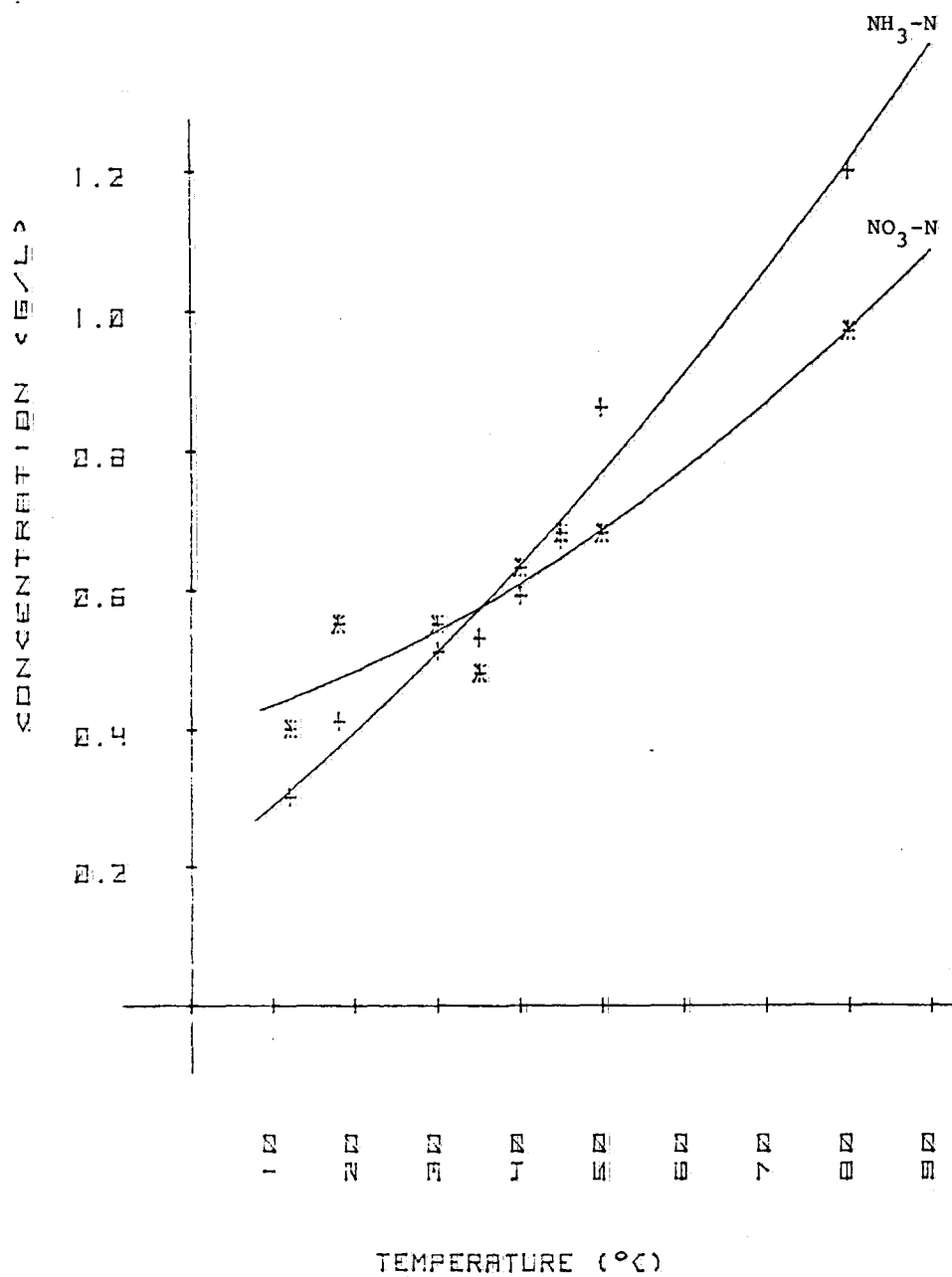
PROCESS DEVELOPMENT

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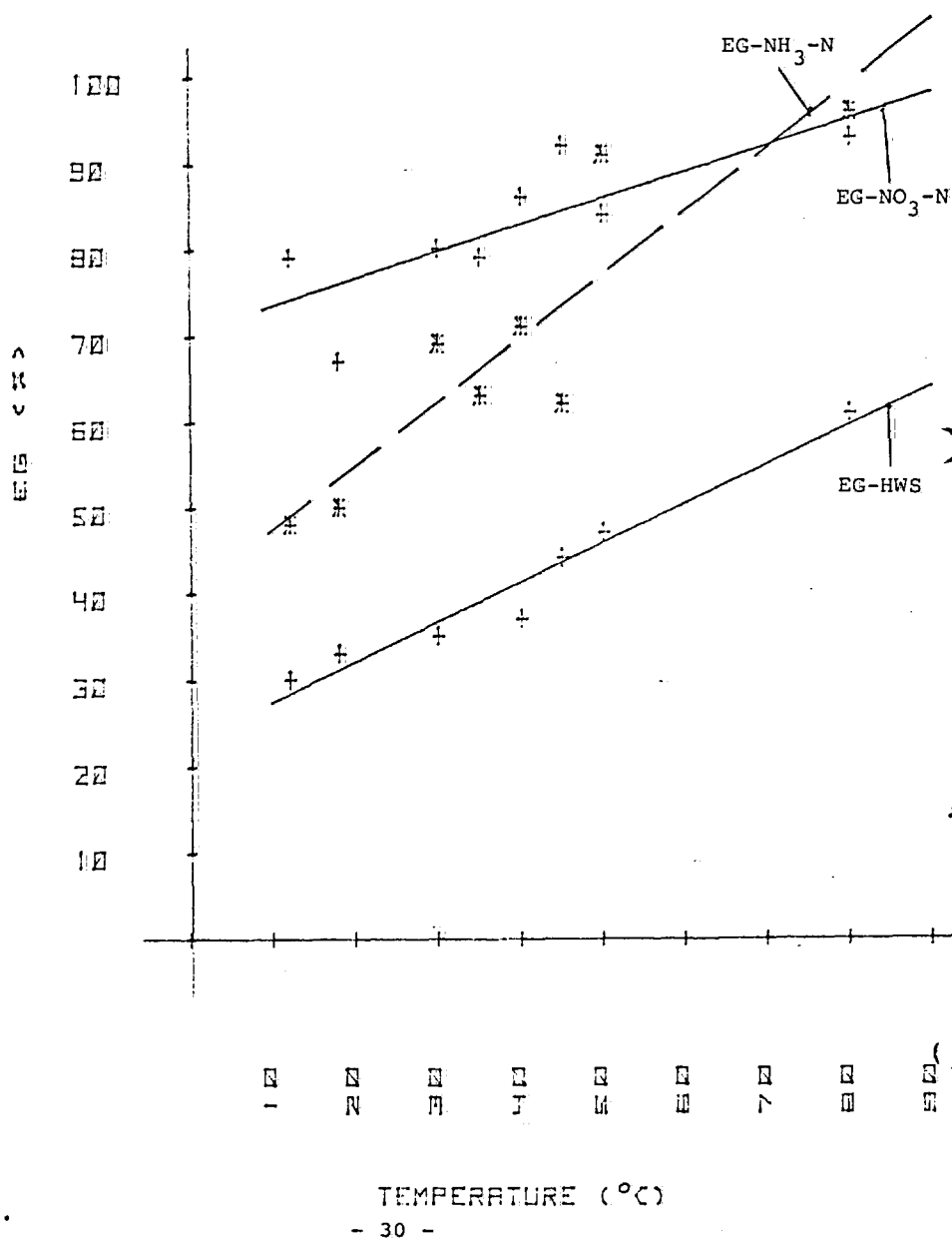
EFFECT OF FEEDWATER TEMPERATURE ON $\text{NH}_3\text{-N}$
AND $\text{NO}_3\text{-N}$ CONCENTRATION OF THE EXTRACT



- 29 -

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EFFECT OF FEEDWATER TEMPERATURE
ON EXTRACTION GRADES OF STRIPS



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